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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,430	09/23/2003	Jiunn-Jyi Lay	MR957-1399	3277
4586	7590	03/09/2006	EXAMINER	
ROSENBERG, KLEIN & LEE 3458 ELLICOTT CENTER DRIVE-SUITE 101 ELLICOTT CITY, MD 21043				MARX, IRENE
ART UNIT		PAPER NUMBER		
1651				

DATE MAILED: 03/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/667,430	LAY ET AL.
Examiner	Art Unit	
Irene Marx	1651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_ is/are allowed.
- 6) Claim(s) 1-8 is/are rejected.
- 7) Claim(s) \_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.

- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_.

The application should be reviewed for errors and conformity with domestic practice. Error occurs, for example in the recitation of “t0” in claim 4(1), and in the use of a “:” at the end of claim 4. (2), (3) and (8).

To facilitate processing of papers at the U.S. Patent and Trademark Office, it is recommended that the Application Serial Number be inserted on every page of claims and/or amendments filed.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is vague and indefinite in the recitation of “treating and concocting seeding material”. The material and steps intended are not clearly defined. The antecedent basis for “fermenting” and “fermentation” is not clearly delineated. Also the intended meaning of “purifying gas exhausted by hydrogen producing fermentation” is unclear. The nature of the gas purified cannot be determined.

Claims 1-8 are incomplete in the absence of a recovery step for the product produced. It is apparent from claim 1 that this is a hydrogen production method.

While there is no specific rule or statutory requirement which specifically addresses the need for a recovery step in a process of preparing a composition, it is clear from the record and would be expected from conventional preparation processes that the product must be isolated or recovered. Thus, the claims fail to particularly point out and distinctly claim the “complete” process since the recovery step is missing from the claims. The metes and bounds of the claimed process are therefore not clearly established or delineated.

The stimulation of germination in Claim 2 is not understood. It is unclear what this step is intended to entail. The “contain activeness” step is similarly not understood.

Claim 2 is confusing in that there is no clear correlation between “treating and concocting seeding material” and the use of weed compost or cattle dung in a fermentor. In addition claim 2 is confusing lacking antecedent basis for “said seed compost” in (2).

Claim 3 is vague and indefinite in that it fails to find proper antecedent basis for the recitation of “disconnect the gas exposing device to prevent air from flowing therein”. It intended meaning of “gas exposing device” is unclear.

Claim 3 lacks antecedent basis in (III) of claim 1 for “said seeding material” and “said nutrient”.

Claims 3 and 5 are confusing in that it is not indicated whether the degrees are centigrade or Fahrenheit.

Claim 3 is vague and indefinite in the use of parenthesis at least in (1) and (4) since it is unclear whether the parenthetical material is or is not intended to be part of the claim.

In claim 3 it cannot be readily ascertain what is intended by a “thermostatic batch reactor”. It is unclear what this apparatus entails. Also the intended ratio cannot be readily interpreted, particularly with the proviso “(in dry condition)”. In claim 1, the material is mixed with water. Clarification is required.

In claims 3(2) and 6.(1) it is uncertain whether the percentage is by weight or volume. The nature of the “basic material” is uncertain in claims 3 and 6. No new matter may be added.

Claim 6 fails to find proper antecedent basis in claim 3 for “the continual reactor”. “Continual” appears to be distinct from “batch”. In section (4) the meaning of rpm/m is uncertain.

Regarding claim 7, the phrases “such as” or “or the like” render the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by “or the like”), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d).

Claim 4 is incomplete in lacking punctuation at the end of the claim.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueno *et al.* (U.S. Patent No. 5,464,539) taken with Zhang *et al.* (U.S. Patent No. 6,342,378)

To the extent that the claims are understood, the claims appear to be directed to a process of producing hydrogen and methane by fermentation of waste materials such as plant material or compost in a reactor wherein the microorganisms are obtained from compost or cattle dung and wherein various nutrients such as ionic materials may be added to the waste mixture.

Ueno *et al.* teach a process of producing hydrogen and methane by fermentation using wastes as the raw material such as plant material or compost in a reactor wherein the microorganisms may be obtained from compost and wherein various nutrients such as ionic materials may be added to the waste mixture.

Ueno *et al.* disclose that nutrients including ionic materials are added to the waste mixture. See, e.g., Examples, and in particular Example 1. Even though the nutrients are not identical, the inclusion of yeast extract suggests that minerals and other micronutrients are present in suitable concentrations. In addition, the reference recognizes that methane may also be produced, depending on the microorganisms present. Col. 4, lines 20-28. That the microorganisms required for the production of hydrogen are naturally present in the compost is disclosed at col. 2, lines 13-60. Also, sludge compost is used as the inoculum in Example 4. A temperature of 40°C-70° C is indicated as appropriate for the process, which overlaps with the instantly claimed range (col. 3, line 3). The use of nitrogen for anaerobicity is also disclosed. Col. 3, line 1. It is well recognized in the art the sludge compost is comprised of small particles, generally under 1 mm in length and width.

The reference does not clearly indicate that the compost comprises weed compost or cattle dung. However, Zhang *et al.* teaches the production of at least methane from biomass such as bagasse, grass and other agricultural waste, including manure from cattle. See, e.g., col. 1-2

and col. 6, lines 39-42. One of ordinary skill in the art would have expected the production of hydrogen at least to some extent, particularly upon adjustment of process conditions.

With regard to the presence of ionic materials, these materials are not specifically added, but are reported to be present. See, e.g., Zhang, Col. 12, lines 23-35 and Table 6. In addition, the material is mechanically processed, by a method such a grinding. Note that the apparatus has an agitating means (col. 4, line 42), thus suggesting that the process may be conducted under agitation.

The process conditions discussed in the references appear to be substantially the same as claimed. However, even if they are not, the adjustment of process conditions for optimization purposes identified as result-effective variables cited in the references would have been *prima facie* obvious to a person having ordinary skill in the art, since such adjustment is at the essence of biotechnical engineering.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to modify the process of Ueno *et al.* by using further sources of biomass and using a variety of process parameters as suggested by the teachings of Zhang *et al.* for a substantially similar process, for the expected benefit of maximizing the production of hydrogen an economically important fuel material.

Thus, the claimed invention as a whole was clearly *prima facie* obvious, especially in the absence of evidence to the contrary.

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irene Marx whose telephone number is (571) 272-0919. The examiner can normally be reached on M-F (6:30-3:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Wityshyn can be reached on 571-272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300 .

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Art Unit: 1651

*Irene Marx*

Irene Marx  
Primary Examiner  
Art Unit 1651